

# CNM101: CNM User Orientation

The information given here can help make your visit to the Center for Nanoscale Materials (CNM) more comfortable and productive and help you to better understand and satisfy US Department of Energy and Argonne National Laboratory expectations. Although it may touch on some of the topics covered in the Argonne orientation (ESH100U), its primary intent is to



provide information specific to your visit to the CNM.

## **After completing this course, you should be able to:**

- Outline and explain your responsibilities as a CNM facility user
- Identify where you should go for help in specific situations
- Describe what to do in emergencies in Buildings 440 and 441.

## Visitor Kiosk

For safety and security reasons, it is necessary to know of all users present in the CNM Facility. Users are required to sign in and out of Building 440 using electronic kiosks that are located in the CNM lobby and at the entrance from the APS Experiment Hall.

To use the electronic system, present your badge to the reader on the kiosk, bar code side up and 4"-6" away. Users who are also Argonne staff will see a "welcome" notice. Users who are not Argonne staff will see a list of their proposals; select the proposal upon which you will work. Also, the kiosk is used for special notices about closures, etc. Remember to scan out when leaving the facility.



## CNM User Work Approval

The US Department of Energy and Argonne National Laboratory require that:

- The CNM define all work to be performed by users and evaluate associated risks
- The CNM and its users reduce risks to acceptable levels by implementing hazard controls required by Argonne policy and procedures
- The CNM formally authorizes the conduct of work before it begins

The CNM and its users meet these requirements by cooperatively:

- Planning work
- Developing User Work Approval records
- Implementing the hazard controls specified in the records, including those in standard operating procedures incorporated by reference

## User Work Approval Records

A CNM User Work Approval (UWA) consists of:

1. A definition of approved work,
2. A description of hazards,
3. Required hazard controls,

4. User acknowledgements and facility approvals.

## **Definition of Approved Work**

### **This section of a User Work Approval (UWA) contains:**

- a summary work description
- participating personnel
- equipment
- materials
- processes

The list of processes typically consists of a list of standard operating procedures (SOP) that have been incorporated by reference. The SOPs identify hazards and specify how work is to be performed, including precautionary actions.

## **Modifications to Approved Work**

The CNM understands that in a research environment plans may need to change. If you want to add personnel or processes to your UWA, inform your CNM scientific contact. Such changes can generally be accommodated if they are consistent with the description of work. The CNM will issue a revised UWA.

## **Seek Assistance Concerning Approved Work**

We urge you to seek assistance from any CNM staff member or more experienced users if you have any questions or concerns about CNM processes, equipment, or facilities.

## **Working Hours**

The CNM is mandated to offer user access only 40 hours per week, which is accommodated Monday-Friday, 7:00 am - 7:00 pm.

## **Laboratory Closure**

The CNM prohibits users from working on-site when Argonne management has closed the Laboratory in response to holidays, inclement weather or emergencies affecting the site.

## **CNM Maintenance Periods**

In order to ensure CNM reliability and minimize negative impacts on availability to users, the facility has consolidated maintenance into three-weeklong maintenance periods per year. Certain laboratories or capabilities may be closed during these periods; notices will be sent in advance but you are advised to contact your CNM scientific contact before scheduling a visit during these periods. The specific dates for these periods, which are used to perform preventive maintenance on the scientific instruments and the facility's operating infrastructure systems, are announced via the user community email distribution list and the CNM [website](#) .

**Users cannot work off-hours unless approved by their CNM scientific contact.**

## **Extended Work Shifts**

The CNM considers a work shift to extend from the start of work until the worker (Argonne employee or CNM user) begins a break that will last at least 8 continuous hours. The CNM prohibits Argonne employee or user activity in technical facilities by individuals who started their work shift more than 12 hours earlier.

## **Working Alone Restrictions**

Working alone means a situation in which a worker is not in the immediate proximity of others, cannot be seen or heard by another person, and contact with another worker is unlikely for more than five minutes.

The CNM prohibits working alone in technical facilities unless the standard operating procedure (SOP) explicitly permits working alone.

The CNM prohibits the use of audio devices because they interfere with a person's ability to clearly understand a public address system announcement or warning system signal.

## **Key CNM Personnel**

### **CNM Scientific Contact**

The CNM assigns a scientific contact to each user proposal. The scientific contact's responsibilities include: introducing you to staff who will support the conduct of your work, ensuring that you get an adequate orientation to the facilities in which you will work and the User Work Approval (UWA) for your project, and facilitating needed revisions to the UWA for your work.

### **Process Custodian**

The process custodians have responsibility for managing equipment, training users, and authorizing your work for individual processes. You should contact them if you have technical questions about their process.

### **Building Manager**

Building managers are responsible for utilities and common areas in CNM buildings.

### **Lab Area Lead**

The Lab Area Leads are responsible for maintaining their laboratory spaces, maintaining "common" equipment, and ensuring needed supplies are in stock. You should report problems with any laboratory, including low supply levels, to the assigned Lab Area Lead.

### **Environment, Safety, and Health Support**

The CNM ESH Coordinator is familiar with health, safety, transportation, and environmental concerns. You may contact this certified professional through your scientific contact, the CNM User Office, or the CNM Division Office.

This includes providing advice about working at the facility with any pre-existing health conditions of concern.

## Chemical Manager

The CNM Chemical Manager is responsible for the lifecycle of chemicals including procurement, shipping, storage and waste disposal.

This person can also provide information regarding proper storage and shipping of samples.

## Work in Locations Managed by Other Argonne Divisions

Some of your work might be conducted in a location managed by another Argonne division. While you work in a space managed by another division, you must adhere to its procedures. Other division's procedures are integrated into your UWA.

## Office Space

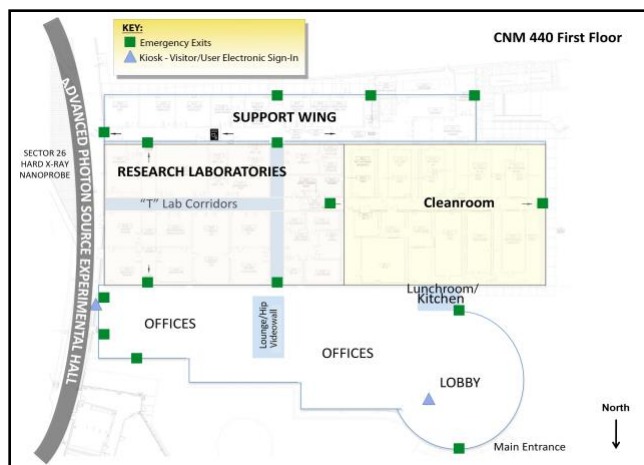
The CNM provides users with desk space and lockers on a first-come, first-serve basis in Building 440.

These are located in the Upstairs Gallery area. Desks and lockers are provided for daily use and cannot be reserved for long-term use. They must be emptied at the end of every workday.

## Laboratory Space in Building 440

As posted, the "T" laboratory corridor should not be used to travel from the office space to the south corridor or vice versa. This helps reduce any unnecessary foot traffic near the clean room facility. Your scientific contact will identify the "T" corridor as part of your on-site orientation at the CNM.

If you have boxed or crated items, notify your scientific contact. Such items must be unboxed or uncrated at the dock or south corridor prior to entering the





laboratory corridor space. Please ensure that debris is placed in a trash container and write the word TRASH on all other material to be discarded by the custodial crew.

## **Proximity Card Reader**

CNM spaces are equipped with proximity card readers that not only allow keyless entry into the building during off hours, but also into individual laboratory spaces.

Your individual access needs have been entered into the card reader database. If you cannot gain access to a space you need to enter, inform your scientific contact or the User Office. Do not prop open doors.



## **Tool Usage Trackers**

Swipe your prox card (which is your user badge) on the small individual tool usage readers/trackers to record start and stop times on equipment.

## **Hazards**

The hazards associated with experimental processes are normally identified in the standard operating procedures (SOPs) that are listed and described in the User Work Approval (UWA).

## **Hazard Controls**

The controls required for experimental processes are identified in the SOPs that are listed and described in the UWA.

You may not proceed with any work until you have been trained and authorized for your specific processes.

The information you need to know is incorporated into the SOPs under which you'll work and to which you will receive an orientation. You can ask your scientific contact to arrange a meeting with a chemical hygiene officer if you have questions about the plan or have concerns about exposure to a chemical hazard.

## Worker Health and Safety

- ❑ Researchers should not attempt to troubleshoot or repair CNM equipment in any manner not explicitly provided for in the SOP for the equipment and process.
- ❑ All CNM equipment should be treated as though it might be contaminated with nanomaterials.
- ❑ The CNM recognizes that users might wish to ship some materials brought to the CNM or synthesized at the CNM to their home institutions for (potential) further study. If so, inform your scientific contact.
- ❑ Your scientific contact can make the arrangements needed to ensure safe and lawful transport of the materials. **Do not transport hazardous materials in your own vehicle** while on Argonne property.
- ❑ CNM user activities qualify for an exemption from the US Environmental Protection Agency (EPA) "significant new use" notification requirements because they produce and require handling of only small quantities of nanomaterials solely in research and development activities.
- ❑ The CNM ESH Coordinator can provide advice about working at the facility with any pre-existing health conditions of concern.

## Hazard Communication Placards



Hazard communication information placards posted at individual laboratory entrances include:

Top placard: Emergency contact information  
Middle placard: Entry requirements (e.g. PPE)  
Bottom placard: Specific hazards potentially present\*

\*The hazard icons indicate only the potential presence of the hazard and do not necessarily indicate an exposure risk upon entry.

CNM requires users to follow the entry requirements. See your scientific contact with any questions about placard information or hazards that could be present.



## Laboratory Attire

The following attire is not permitted in CNM laboratory space:

- shorts
- sleeveless shirts
- sandals

The CNM will provide you with a disposable lab coat, which should not be worn outside the laboratory wing. Do not bring your own lab coat.

The CNM provides approved safety glasses and splash goggles; however, you may use your own safety glasses if they satisfy ANSI Z87 requirements.

## Chemical Labeling and Waste

CNM requires that users label containers holding samples and in-process materials. On the label, identify: the name of the person putting the chemical in the container (the “owner”), the common name(s) of the chemical(s), the date, associated hazards, and nanomaterials (if present).

Containers that are very small, e.g., capillary tubes, can be placed in labeled (larger) secondary containers. Exceptions to this requirement may be noted in SOPs.

Labels are available in every laboratory. If you need additional labels, contact your scientific contact.

Practice good housekeeping. Clean your work area(s) at the end of each shift and at the end of your visit. Ensure proper disposition of any research samples with labels and by communication with your SciCon or the CNM Chemical Manager.

Safety data sheets (SDS) are located [on-line](#). If you cannot find an SDS, contact your scientific contact.

The CNM has arranged for the disposal of chemical wastes you generate while working at the CNM. **Do not transport hazardous materials in your own vehicle while on Argonne property.**



A divisional policy defines the production and composition of solid waste stream generation processes at CNM along with their associated RCRA (Resource Conservation and Recovery Act) waste determinations.

The majority (>95%) of processes produce RCRA regulated waste, including codes D001 (Ignitability), D002 (Corrosive), F002 (halogen solvents), and F003 and F005 (non-halogen solvents). A small amount (1-2%) has certain toxicity characteristics. CNM does not generate K-listed waste. Before beginning work, users are responsible for ensuring that their waste will comply with these parameters.



### **Egress, Exits and Emergency Equipment**

Emergency egress is the path (hallway, door, stairs) out of a building during a fire or any other emergency. To assure your safety, keep egress paths, aisles and exclusion zones (marked by yellow tape) free of obstructions. Do not store items in these areas.

For additional guidance, to report deficiencies or any other concern, you may contact:

- your CNM scientific contact,
- Lab Area Lead,
- the facility manager or
- the CNM ESH Coordinator.

### **Eating and Drinking**

Food and drinks are NOT allowed in CNM laboratories. Drinks such as water, coffee, tea, soda, etc. are allowed in the office areas. Food may only be eaten in the kitchen/lunchroom area.

### **Site-Wide Emergencies**

During work hours at Argonne, site-wide emergencies are announced by a public address announcement. When site-wide emergencies occur off-hours, information pertinent to employees can be found online at the Argonne Emergency Information web page or on the Info Line at (630) 252-4636 - (630) 252-INFO.

## **Spills**

You should not clean up any spill if doing so causes you concern. Prior to cleaning up small chemical spills, contact the process custodian or the Lab Area Lead for guidance. Report larger spills of hazardous chemicals by dialing 9-1-1.

## **Reporting Emergencies**

If you dial 9-1-1, you must notify your process custodian, the Lab Area Lead, or scientific contact. Without putting yourself at increased risk, you should follow the instructions of the person you speak to while reporting the concern and you should stay reasonably near the area.

There are no penalties for dialing 9-1-1.

## **Warning Signals/Alarms**

In the event of a fire, a heat or smoke detector or fire suppression system will activate and initiate the sounding of the local alarm bells and strobe lights. The Argonne Fire Department will be simultaneously alerted. If a fire is discovered before an automatic system activates, dial 9-1-1 from an Argonne phone or 630-252-1911 from a mobile phone.

## **Medical Emergencies**

Dial 9-1-1 in cases of injury, illness, or medical emergency. The Argonne Fire Department will respond and provide transportation to an offsite medical facility. If a user who is not an Argonne employee enters the Argonne Medical Department with an injury, illness, or medical emergency, they will be given minimal treatment, and the medical staff will call the Fire Department for transportation to an offsite medical facility. Users who are not Argonne employees are expected to carry their own health insurance for treatment at offsite medical facilities.

## **Response to Emergency Alarms**

If a fire alarm sounds or if you are otherwise directed to evacuate the building, you should follow the most direct route to the Sector 26 hutch area

in the adjoining APS experiment hall. You should stay with other CNM personnel and cooperate with efforts to account for CNM building occupants.

When a tornado warning is announced over the public-address system (indoors) or a siren is sounded (outdoors), all occupants should follow the nearest route, using stairways not elevators, to the designated tornado shelters within the building. These areas are all identified by signs marked Tornado Shelter.

**Tornado shelter(s) in Building 440 can be found at:**

- The first and second floor restrooms
- Corridor D104 east end (support wing)
- Corridor B113 ("T" laboratory corridor) east end
- Corridor B124 mid point

Should a drill take place during your visit, your participation is mandatory and your response should be the same as it would be in an actual emergency.

**Exercising "Stop Work or Pause" Authority**

If you order another person to "stop or pause work" because of a concern about safety, you must notify your scientific contact, the Lab Area Lead or a CNM ESH Coordinator.



**Stack Lights/Alarms in Building 440**

This section pertains to the clean room facility and the chemical staging/storage room, room C121. In the event of a hazardous/toxic gas release, the Gas Detection Alarm System will activate.

**If the warning light at the clean room entry door is flashing, then do not enter the clean room.**

## **Alarm lights inside the clean room:**



**BLUE blinking lights:**

No action is necessary. This light is activated by system faults and maintenance activity.



**AMBER blinking lights:**

If you are in the clean room, go to the gowning room and wait for further instructions.



**RED blinking lights:**

If you are in the clean room, go to the gowning room and wait for further instructions. The RED lights will be accompanied by an audible alarm.

## **Sanctions for Conduct Inconsistent with Policies and Procedures**

Argonne expects you to conduct yourself and your work in conformance with requirements appearing in regulations and Laboratory policy. The CNM has incorporated what you need to know to work in conformance with such requirements into this training, User Work Approvals, and standard operating procedures.

CNM management has and will use its authority to prohibit or restrict user access if it finds that your conduct fails to meet expectations. Ask questions if you are uncertain about any requirements.

## **CNM User Responsibilities**

The CNM and its personnel are here to provide the support you need to work safely and effectively. Please communicate openly with them. In addition, we have the following expectations of every CNM user:

### **The CNM expects you to:**

- Ensure that a User Agreement detailing intellectual property rights and liability concerns is in place between the CNM and your home institution.

- Register with the CNM in advance of your visit to ensure clearance onto the Argonne campus.
- Scan entry into and exit from CNM buildings using (a) the kiosk for 440; (b) the on-line Check In/Out application on Inside CNM for the other buildings.
- Read, sign, and work in conformance with your User Work Approval (UWA).
- Complete and maintain all training requirements.
- Call to the CNM's attention your uncertainty about hazards, hazard control requirements and other expectations.
- Receive authorization before engaging in work.
- Alert your scientific contact if you need to modify your work.
- Clean up your work areas at the end of each shift and at the end of your visit. Dispose of your chemicals and research samples properly (i.e. labeled; inform your SciCon and/or the CNM Chemical Manager).
- Respect work hour restrictions.
- Ask if in doubt.

**The CNM further expects you to:**

- Complete a User Satisfaction Survey to provide feedback. The on-line link is [https://pico.cnm.anl.gov/survey/cnm\\_survey.php](https://pico.cnm.anl.gov/survey/cnm_survey.php),
- Contribute a CNM User Activity Report upon completion of the project,
- Acknowledge the use of the CNM when publishing results as "Use of the Center for Nanoscale Materials, an Office of Science user facility, was supported by the U. S. Department of Energy, Office of Science, Office of Basic Energy Sciences, under Contract No. DE-AC02-06CH11357."
- Report all publications resulting from work at the CNM to the CNM User Office,
- Arrange for CNM review and approval of photographs through the CNM User Office,
- Arrange for a CNM staff member to escort potential visitors or guests; you may not host a tour or a guest visit,
- Be aware that certain information including your name, institutional affiliation, and project title will be publicly disseminated in the DOE Office of Science user facility user projects database at <http://science.energy.gov> at the end of the fiscal year, and
- Be aware that you will have 30 days from your UWA expiration date to copy or move electronic data to non-CNM-owned equipment.



## **This concludes CNM101**

If you have questions, address them to your CNM scientific contact.